OCCURRENCE OF TWO ANTHOPHILOUS DIPTERA ON *GEUM RADIATUM* (ROSACEAE) IN NORTH CAROLINA[1,2]

F.E. Brackley[3], J.F. Burger[4]

ABSTRACT: Two species of Diptera, *Hylemya* (*Paregle*) *aestiva* (Anthomyiidae) and *Chrysotus costalis* or *C. subcostata*, are reported visiting flowers of *Geum radiatum* (Rosaceae), a precinctive species restricted to mountain "balds" of Tennessee and North Carolina. Anthophily in Diptera is discussed. The collection locality for *H. aestiva* is a significant southern extension of its known distribution.

During a botanical excursion to North Carolina in July, 1979, F.E. Brackley and John Korpi of the University of New Hampshire, collected a male of *Hylemya (Paregle) aestiva* (Meigen) (Anthomyiidae) visiting a flower of *Geum radiatum* Michx. (Rosaceae). The collection site, Tater Bald, is located in Watauga County, near Boone, North Carolina.

Hylemya aestiva is a holarctic anthomyiid fly occurring in North America from Alaska to Nova Scotia, south to Washington, Colorado and New Hampshire (Stone *et al.*, 1965; F.C. Thompson, personal communication). Hennig (1968) places this species in the genus *Nupedia* Karl. There is some sentiment for elevating the subgeneric categories of *Hylemya* to generic status, but nomenclature in this paper follows the 1965 North American Diptera Catalog. The present record from North Carolina represents a significant range extension for this species.

Hennig (1968), citing several sources, stated that *H. aestiva* (as *Nupedia aestiva)* was known to visit flowers of Ranunculaceae, Compositae, Saxifragaceae, Umbelliferae and Caryophyllaceae. He also stated that *H. aestiva* oviposits on and develops in cattle droppings. A related species, *Hylemya (Paregle) cinerella* (Fallen), is commonly reared from cattle dung in North America.

Hylemya aestiva has rather unique mouthparts, the proboscis being elongate, slender, and strongly sclerotized, in contrast to the short, stout, fleshy proboscis of other *Hylemya* (*Paregle*) species. The elongate proboscis may be an adaptation for probing blossoms and consuming nectar

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[2]Scientific Contribution Number 1030 from the New Hampshire Agricultural Experiment Station.

[3]Department of Botany and Plant Pathology, University of New Hampshire, Durham,NH 03824

[4]Department of Entomology, University of New Hampshire, Durham, NH 03824

or pollen. The proboscis resembles that of some blood-sucking species and the male observed on *Geum radiatum* painfully poked the skin of the senior author when it was collected.

Anthophily has been reported for a related anthomyiid, *Hylemya (Delia) liturata* (Meigen, visiting *Rorippa islandica* (Oeder) Borbas (Cruciferae) (= *R. palustris)* rarely and *Chrysanthemum leucantheum* L. frequently (Mulligan and Kevan, 1973). Proctor and Yeo (1972) reported that a common muscid fly, *Fannia canicularis* (L.) visits flowers.

A female of *Chrysotus costalis* (Loew) or *C. subcostata* (Loew) (Dolichopodidae) also was collected from a flower of *Geum radiatum* at the same locality. Identification of this fly is tentative, since only the males of *Chrysotus* can be identified with certainty. Some Dolichopodidae appear to be occasional visitors to flowers and have been found on another Rosaceous species, *Potentilla reptans* L. (Proctor and Yeo, 1972). However, *Chrysotus* spp. have not been previously identified as anthophiles. Little is known of the adult food habits of Dolichopodidae except that some species are predators of other insects.

The host flower for these Diptera, *Geum radiatum*, is a rare species precinctive to a few balds in the mountains of North Carolina and Tennessee (Justice and Bell, 1968). Diptera were observed on flowers of *G. radiatum* at several other sites within its range. *Geum radiatum* possesses a showy, scentless, yellow flower with characteristics known to be attractive to Diptera (Mosquin and Martin, 1967; Faegri and van der Pijl, 1979). It is uncertain whether both *Geum radiatum* and the flies observed in this study benefit from their association. Flies may obtain nectar for flight energy and may consume pollen as a protein source for ovarian development. Whether they actually pollinate *G. radiatum* is unknown. All Geums are normally outcrossers but are also self compatible (Gajewski, 1957). *Geum radiatum* also is able to reproduce vegetatively, due to the rhizomatous habit. It usually produces abundant seeds with a characteristic long fringed style well adapted for wind distribution.

The importance of Diptera as pollinators in arctic and sub-arctic environments has been documented by Kevan (1972) and McAlpine (1965), and it is likely that species of Dolichopodidae, Anthomyiidae and other Diptera may be more commonly anthophilic at higher elevations than previously reported.

The Diptera were identified by JFB and the male of *Hylemya aestiva* has been deposited in the U.S. National Museum, Washington, D.C. The specimen of *Chrysotus* is in the collection of the Department of Entomology, University of New Hampshire. Voucher specimens of *Geum radiatum* from Tater Bald, North Carolina are deposited in the Hodgdon Herbarium (NHA) at the University of New Hampshire.

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NOTICE

A joint meeting of the IV Congreso Latinoamericano de Entomologia, VI Congreso Venezolano de Entomologia, II Congreso de la Sociedad Panamericana de Acridiologia and the I Simposio de Lepidopterologia Neotropical will convene in Maracay, State of Aragua, Venezuela, from July 5-10, 1981.

An extensive scientific program is being planned which will include several paper sessions alternated with symposia and conferences. In addition to these activities, there will be educational, artistic and commercial exhibits related to insects.

The Organizing Committee invites all persons interested in entomology to participate in and contribute to this scientific event.

Further information may be obtained from Secretario General, IV Congreso Latinoamericano de Entomologia, Instituto de Zoologia Agricola, Apartado 4579, Maracay 2101-A, Estado Aragua, Venezuela